Pledgeball Submissions Data Analysis Report

180 Degrees Consulting BRISTOL Data Analysis Report on Pledgeball Submissions Data from July 2020 – Jan 2024

MARCH 25, 2025

180 Degrees Consulting Bristol
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Contents

Introduction

This document will detail the insights, suggestions, and methodology of the voluntary group from the University of Bristol branch of 180 Degrees Consulting from February to March 2025. This report will cover our findings regarding the most engaged teams, leagues, and regions, as well as temporal analysis demonstrating peak months, days, and times of day for submissions. Each section will provide insights and suggestions on what actions to take from those insights. An appendix contains our code for cleaning the dataset, as well as extra methodological information.

Executive Summary

UEFA Champions League Final 2024

- **Insight:** 46% of submissions came from one game – the UEFA Champions League final played by Real Madrid against Borussia Dortmund on 1st June 2024.
- **Suggestion:** This suggests that it might be effective to re-run the UEFA Champions league final campaign done in 2023/2024 season.

Top Teams

- **Insight:** 35% of UK submissions came from these five teams: Northampton Town, Manchester United, Forest Green, Bristol City, and Norwich City.
- **Suggestion:** This suggests that characteristics of these teams or the way in which Pledgeball has partnered with them provides an effective model.

Top Leagues

- **Insight:** 86% of UK submissions came from Championship League, Premier League, and League One, League 2, the Barclay's Women's Super League.
- **Suggestion:** This suggests that Pledgeball could primarily target these top 5 leagues.

Weekends

- **Insight:** 83% of UK-league submissions came from events that were held on the weekend as opposed to the weekday events.
- **Suggestion:** This suggests that Pledgeball could primarily target weekend events.

Months

- **Insight:** 78% of UK-league submissions (excluding current partial 2024/2025 season) came from events that were held in the months of January and February.

- **Suggestion:** This suggests that Pledgeball could primarily target events in January and February.

Times of Submissions

- **Insight:** 1pm was the peak hour for submissions overall, followed by 7pm. This differs between submissions from supporters of men's and women's teams – for men's teams 1pm, then 7pm were peak hours, for women's teams peak hours were 6pm followed by 1pm.
- **Suggestion:** This suggests Pledgeball would benefit from pushing social media marketing around these peak times to capitalise on this increased engagement.

Days before match of submissions

- **Insight:** Most submissions are made 0-2 days before the match, although hundreds of submissions are made between 20 and 3 days before the match. Earlier than 20 days before the match there is a sharp drop in the number of submissions.
- **Suggestion:** This suggests Pledgeball could increase targeted marketing primarily in the few days before a match, but also throughout the 20-day period before a match.

Global Insights

Basic submissions information

Insight: In the dataset provided from 6th July 2020 to 7th January 2025, football fans from across the world have made 15,080 submissions spread across 953 events.

15,080 Total Submissions

15,080+ Conversations Started

953 Events Submitted For

Insight: The mean average number of submissions per event at approximately 15.8 submissions, while the median average number of submissions per event is 2. This is our first indicator that the number of submissions per event is very skewed, with a handful of key events with a large number of submissions bringing up the mean number of submissions per event.

15.8 Mean Submissions Per Event

2 Median Submissions Per Event

Note: We have chosen to investigate numbers of submissions rather than numbers of pledges and CO2e reduced, since the former is a more insightful metric of fan's engagement with Pledgeball.

Note: Throughout this report the terms 'matches' and 'events' will be used interchangeably; 'events' was the name that stuck as it was in the dataset even though 'matches' is slightly more natural.

Global region of submissions

Insight: As shown in figure 1, 42% of total submissions came from one game, the UEFA Champions League final played by Real Madrid against Borussia Dortmund on 1st June 2024. Despite this, other games played in non-UK leagues made up only 3% of submission with the remaining 55% of submissions coming from games played in UK leagues.

Suggestion: This is illustrative that the marketing methods used at this match were highly effective, and that they would likely be similarly effective if implemented in future years.

Note: While we will briefly discuss this exceptional match from a non-UK league, we have omitted the match, and all other non-UK matches from most of our analysis as our brief was to focus on UK football teams and leagues.

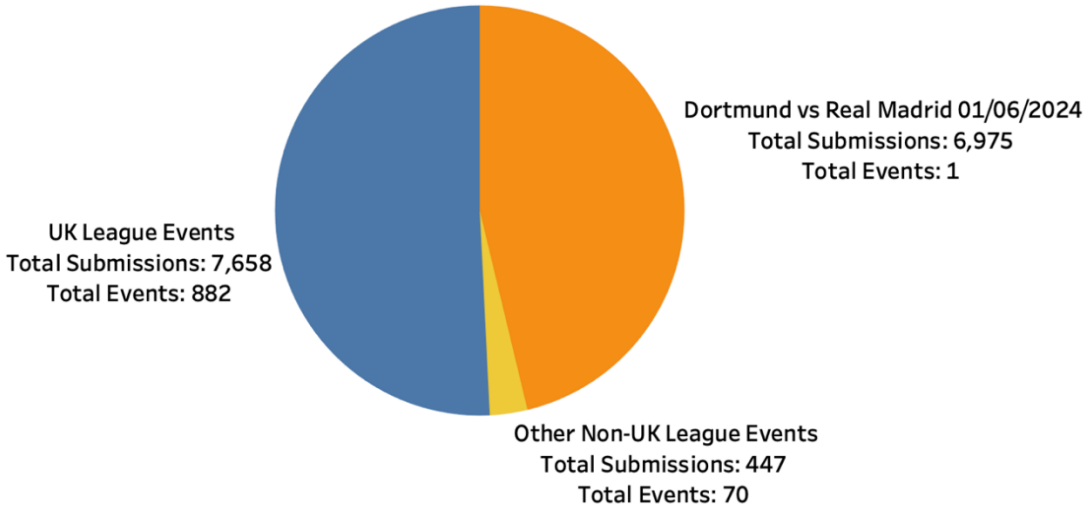

Figure 1: Total submissions by UK/ non-UK Leagues/ Champions League Final (Dortmund vs Real Madrid)

UK Insights

Note: In this section, we will by only be considering submissions for events in UK leagues.

Submissions by football seasons

Insight: As depicted in figure 2, the majority of UK submissions have come from the seasons 2022 and 2023. Here, each football season is of course that which ran from autumn that year to the following autumn.

Suggestion: This shows that Pledgeball is doing well and has grown in impact significantly since it first began, and that if Pledgeball continues as it is doing, there is no reason to assume that the numbers of submissions won't keep growing.

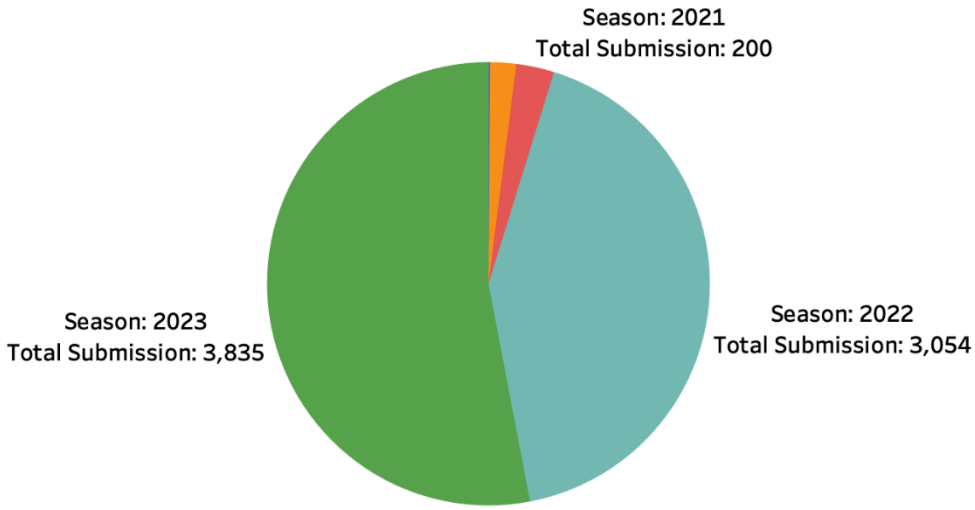

Figure 2: Total submissions by football seasons 2019 – 2023

Submissions by leagues

Insight: Demonstrated in figure 3, the most engaged UK league, by total number of submissions, was the Championship, followed by the Premier League, League One, and League Two. For women's teams, the Barclays Women's Super League saw the highest number of submissions, followed by the Barclay's Women's Championship.

Insight: This is particularly notable considering, for example, that viewership of the Premier League is around ten times larger than that of the Champions league, and hundreds of times larger than that of League One, despite there only being a small difference in number of submissions.

Insight: Figure 4, while it contains a lot of information, also provides many insights. The chart breaks the total submissions of each league into the football seasons from 2019 to the current 2024 season. In this way, we can see that while in the 2022 season, the Premier League was the highest contributor towards total submissions, it was the third highest contributor with far less submissions in 2023. Alternatively, the Champions League, Leagues One and League Two perform better in the 2023 season than the 2022 season, with the latter two seeing nearly twice as many submissions.

Suggestion: Continue to engage with lower men's leagues as their contributions far outweigh their size and have seen increased engagement between the 2022 and 2023 seasons. With women's leagues, focus on continuing engagement with the top two leagues. While the Premier League is difficult to target due to its global fanbase, the success of engagement with local communities in the lower leagues suggests that a similar strategy, focusing on the local fanbases of Premier League teams, may help increase engagement from supporters of Premier League clubs.

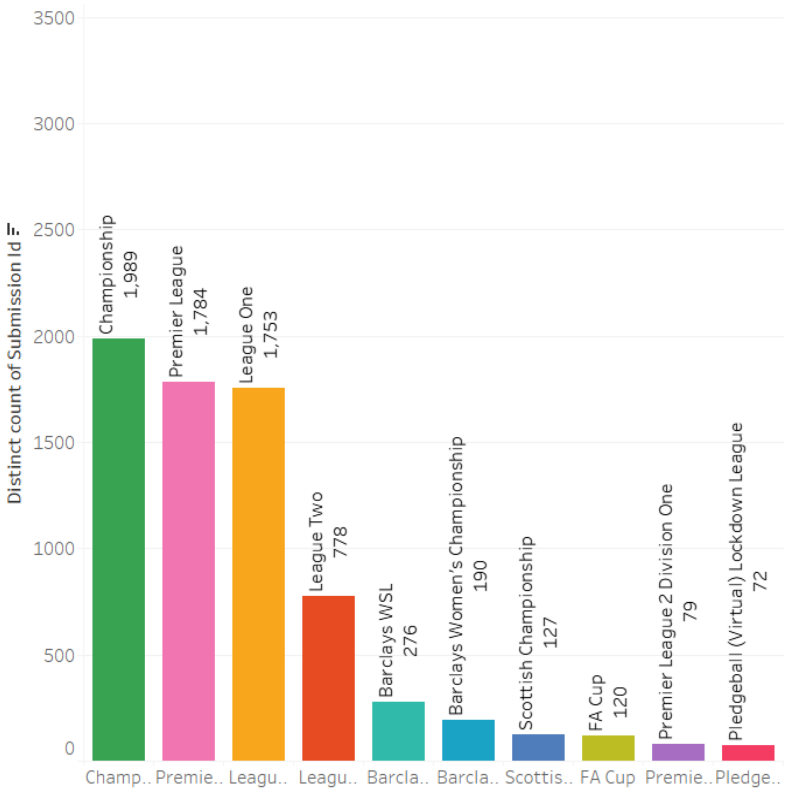

Figure 3: Total submissions of top 10 UK leagues

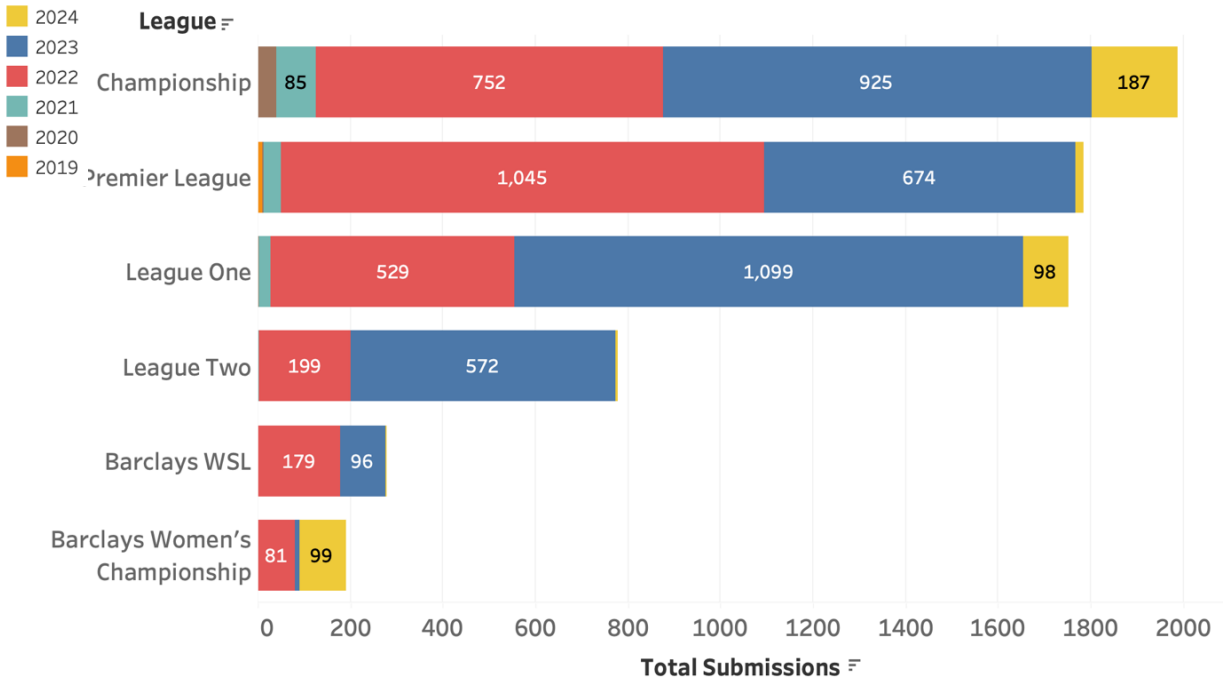

Figure 4: Total submissions of top 6 leagues, colour coded by season.

Insight: Figure 5 varies insofar as for each it shows the number of events that are submitted for rather than the total submissions. Here we can see that only a modest portion of the total events for each league have submissions associated with them, although this is no bad thing if those events bring a large number of submissions. Indeed, what we find is that the number of submissions per event is highly skewed, with a handful of events for any given categorisation making up most of the corresponding submissions. However, despite this, comparing these two charts still gives insight into how the mean number of submissions had changed for each league each season.

Suggestion: An examination of figures 4 and 5 in conjunction with one another reveals that although the Championship receives more submissions than the Premier League, they are almost equal in terms of the number of events submitted for. This becomes even more insightful when considering that the Championship sees significantly more matches played than the Premier League. This suggests that for the Championship, targeting and marketing at specific matches is more effective, while for the Premier League it may be more effective to target and market towards the League as a whole, at all matches.

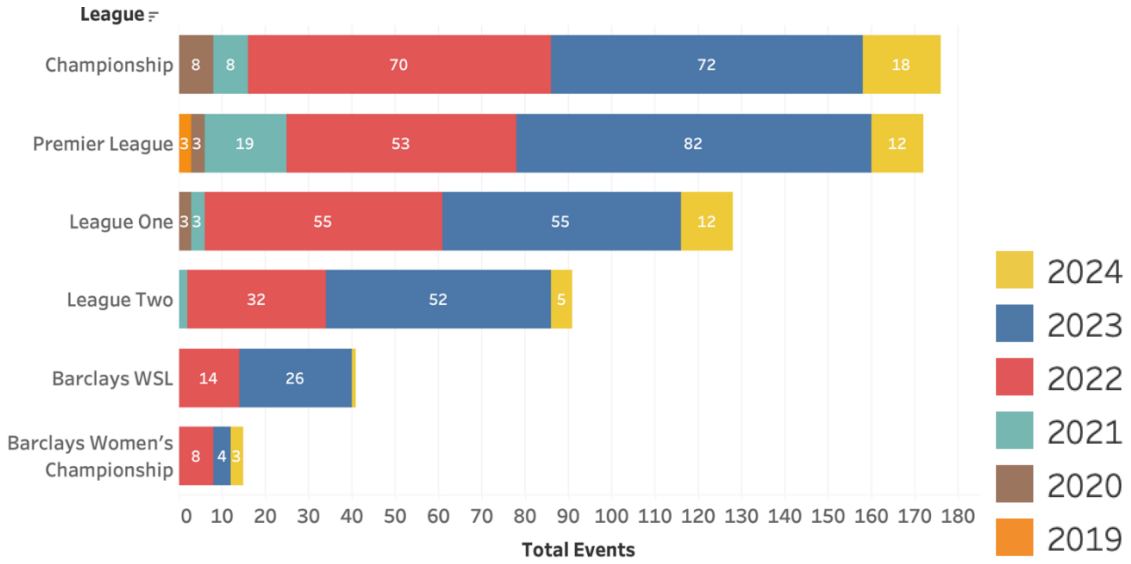

Figure 5: Number of events that received submissions by league, colour coded by season

Submissions by teams

Insight: The top 5 most engaged UK teams were Northampton Town, Manchester United, Forest Green, Bristol City, and Norwich City accounting for 35% of unique submissions. Among the top 10 most engaged UK teams, only 2 are in the Premier League.

Suggestion: Continue promoting Pledgeball within these teams. As many of these teams are smaller with more local fanbases, it would be wise to consider the strength of local fanbases when considering other teams to target. These findings also suggest that when trying to increase engagement from the Premier League, Manchester United would be a good team to focus efforts on and could potentially inspire other Premier League teams to engage more with Pledgeball (particularly given the highly competitive nature of Premier League fans).

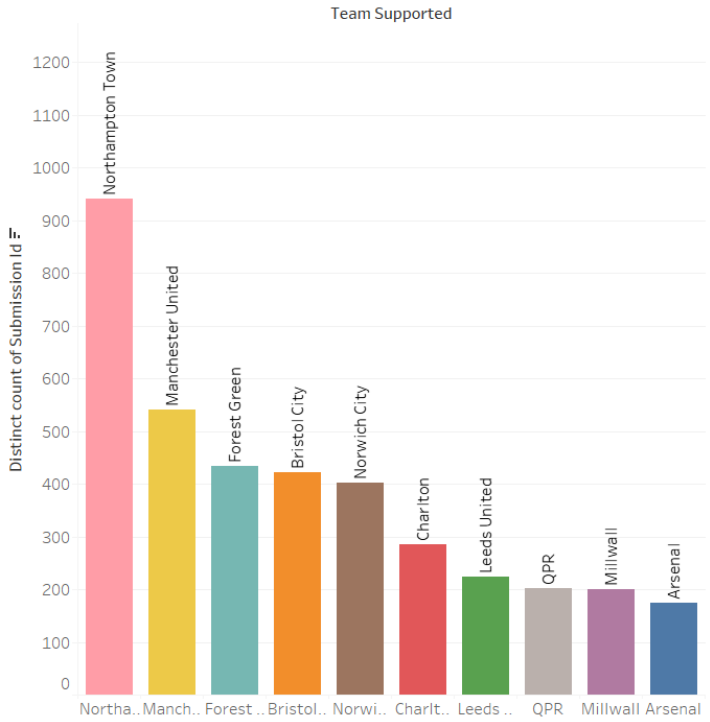

Figure 6: Top 10 teams by number of unique submissions

Submissions by stadiums

Note: Below is a chart which shows how submissions are distributed across the country. Note that this chart is generated from the data on the stadium that the submitted-for match is played in, rather than the location of the submitter-for team, however it still provides useful insights. Note also that we used publicly available data on the latitude and longitude of football stadiums to generate the chart, called stadiums-with-GSP-coordinates.

Insight: With circle area proportional to submissions per location, it is clear to see that club size is not indicative of a high submission team. Teams with strong fan bases and community spirit (e.g. Bristol City and Norwich City) achieve the highest number of submissions, despite only competing in the smaller Championship League. However, it must also be noted that there are general spikes in submissions in large football associated cities (Manchester and London).

Suggestion: As shown in Figure 8, Pledgeball thrives in clubs with closeknit communities and local fanbases. Following the success of Norwich City and Bristol City, Pledgeball should consider other Championship teams to promote to, in order to experience similar increase in submissions. On the other hand, applying the philosophies used in smaller teams on Premier League clubs could see a success akin to Manchester United's large submission count.

Figure 7: Total Submissions of Top 6 UK Regions

Submissions by regions

Insight: Reinforcing the previous section, the most engaged regions of the UK are London and the North-West. However, the distribution is spread across numerous larger and smaller clubs, despite the number of particularly large clubs in these regions. Alternatively, the South West and East Midlands attest their large submission count primarily to individual clubs, Bristol City and Norwich City respectively.

Suggestion: Building upon a more even distribution in the two larger contributing regions, further promotion should occur in the lesser contributing regions, focussing on large scale teams in the Premier League. Since the largest contributors in these regions consist of Championship teams, expanding into the Premier league teams could see potential increases in submission count, similar to Manchester United's contribution to the North West.

Teams like Leicester City in the East Midlands and Bournemouth in the South West stand as great examples of Premier league teams situated in regions of high submission frequency. Encouraging a friendly competition between these teams and the regions' current stand-out contributors (Norwich City and Bristol City) could help increase engagement.

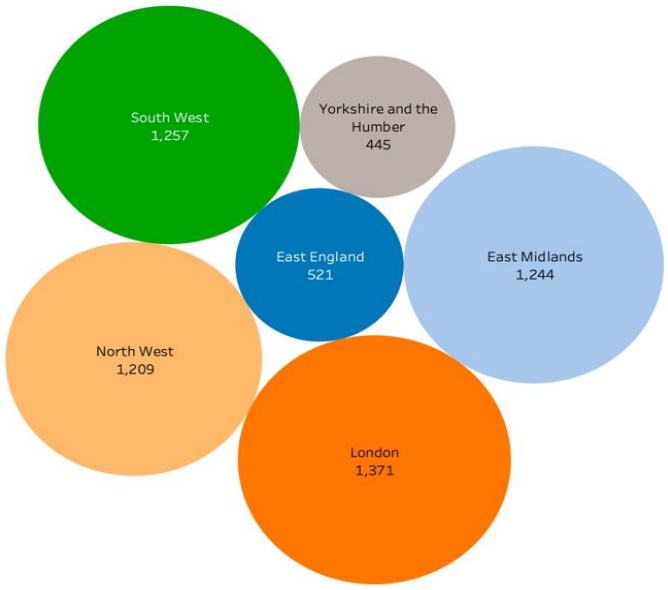

Figure 8: Total Submissions of Top 6 UK Regions

Submissions by league – Women's leagues

Insight: Women's leagues represented the 5th and 6th most engaged leagues across men's and women's leagues in terms of number of submissions, and the most engaged women's league was the Barclay's Women's Super League followed by the Barclay's Women's Championship, as displayed in figure 9. This contrasts with men's leagues, in which the league with the most submissions was the Championship, followed by the Premier League (the men's equivalent to Barclay's WSL).

Suggestion: Women's and men's leagues must be targeted differently – for women's leagues, engagement roughly mirrors the size/fanbase of the league. Thus, Pledgeball's efforts would be best targeted at furthering engagement from the Barclay's WSL; this also has the potential to encourage higher engagement from men's Premier League teams, given many clubs have teams in both the Barclay's WSL and the Premier League.

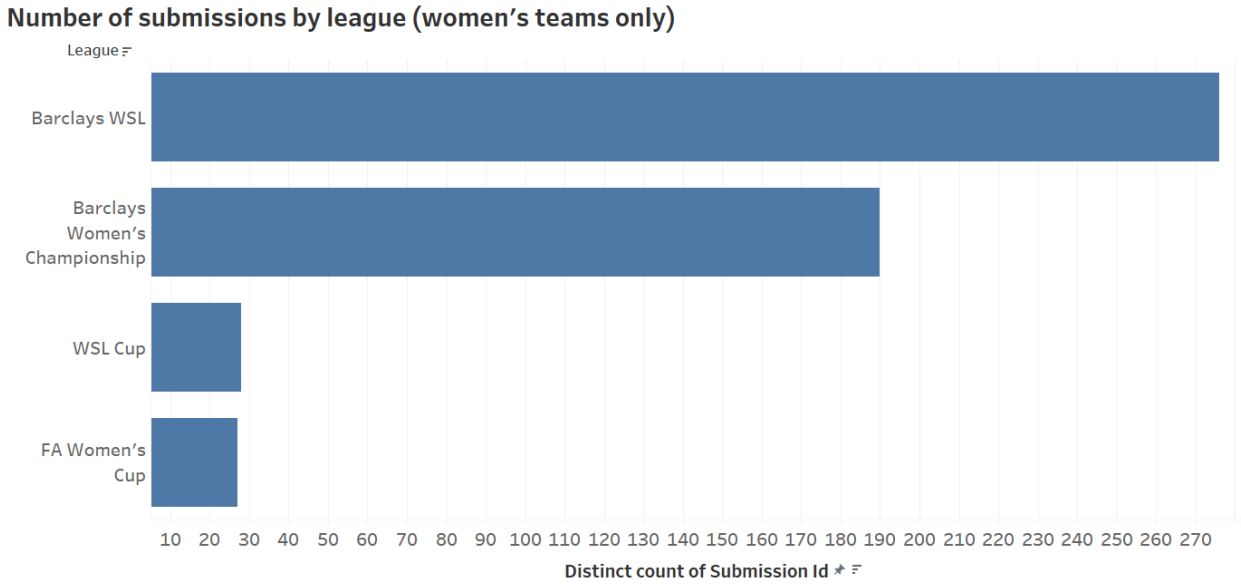

Figure 9: Total submissions of top 4 women's leagues

Temporal Insights

Submissions by month

Insight: As displayed in figure 10, for UK-leagues, most submissions are made in the months of January (~30% of submissions) and February (~45% of submissions). There is a lull in submissions over the summer, aligning with the international break, where we see an uptick in submissions for non-UK leagues, although this is skewed heavily by the Madrid vs Dortmund match at Wembley.

Insight: It is also interesting to note that most January submissions are from League One and League Two, and most April submissions are from the Champions League.

Suggestion: This suggests, for expansion within the UK and its leagues, Pledgeball's marketing and engagement efforts are best concentrated in the months of December, January, and February. For the Championship, promotion of Pledgeball in April also appears effective.

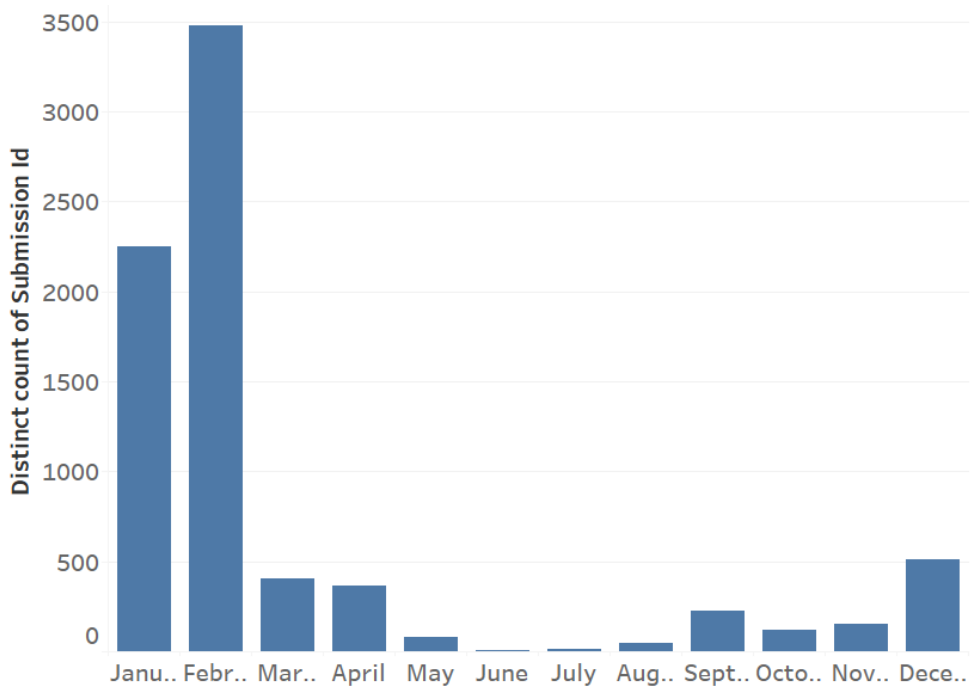

Figure 10: Total submissions by month

Submissions by day of week of event

Insight: If we only consider events in UK leagues, we have a total of 7,658 submissions across 882 events. As you can see from the following chart, most of the submission come from events that are on Saturday, with 4,867 submissions, thus making up 64% of UK submissions, followed by Sunday events with 1,484 submissions and 19% of total submissions, and Tuesday with 515 submissions and so 7% of total submissions.

Insight: We found that most submissions are made for matches on Saturdays, followed by Sundays. Most matches occur on weekends, and accordingly a lot of submissions cluster on Fridays through Sundays. Fans often pledge in the few days leading up to a match, so we see peaks on Fridays (day before many games) and on matchdays. For instance, if Saturday is a common match day, many pledges come in on Friday (and Saturday itself), whereas Monday–Wednesday see fewer pledges.

Suggestion: This suggests that Pledgeball's efforts are most effective when concentrated on weekend events.

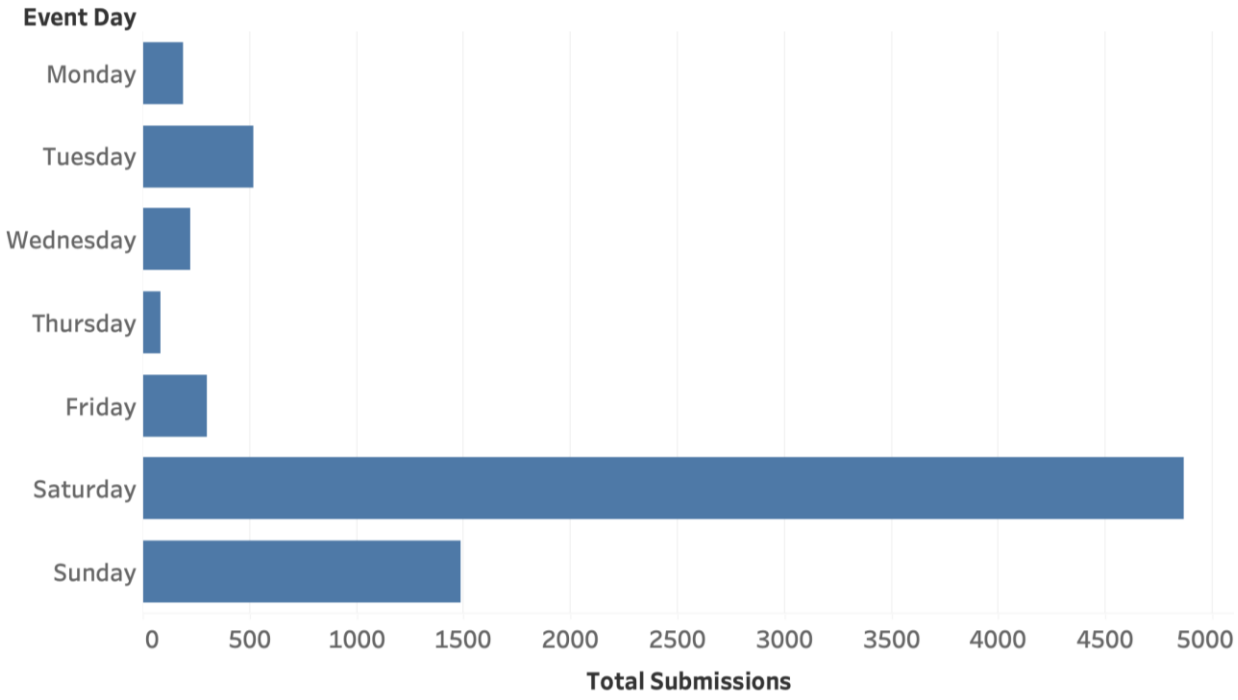

Figure 11: Total submissions by day of week of event

Submissions in the days before an event

Insight: Most submissions were made between 0 and 2 days before the match they align with, with the day of the match by far seeing the most submissions. This trend suggests that last-minute excitement is a significant motivator for fan engagement. This aligns with broader sports marketing insights, where immediate pre-game periods are critical for capturing fan attention There is a steady flow of submissions between 2 and 20 days before the match, at which point there is a sharp drop in submissions. These insights are displayed in figures 12 and 13.

Expanding our view to the 10–50 day range before events, we identify a secondary peak in submissions between 15–20 days prior. While fewer fans pledge this far in advance, this period likely corresponds with the announcement of match schedules and the onset of ticket sales, sparking early interest and engagement.

Suggestion: This suggests that marketing Pledgeball will be most effective if we implement mid-term campaign pushes 2–3 weeks before key matches, followed by a robust final push in the last 1–2 days to maintain and amplify fan engagement

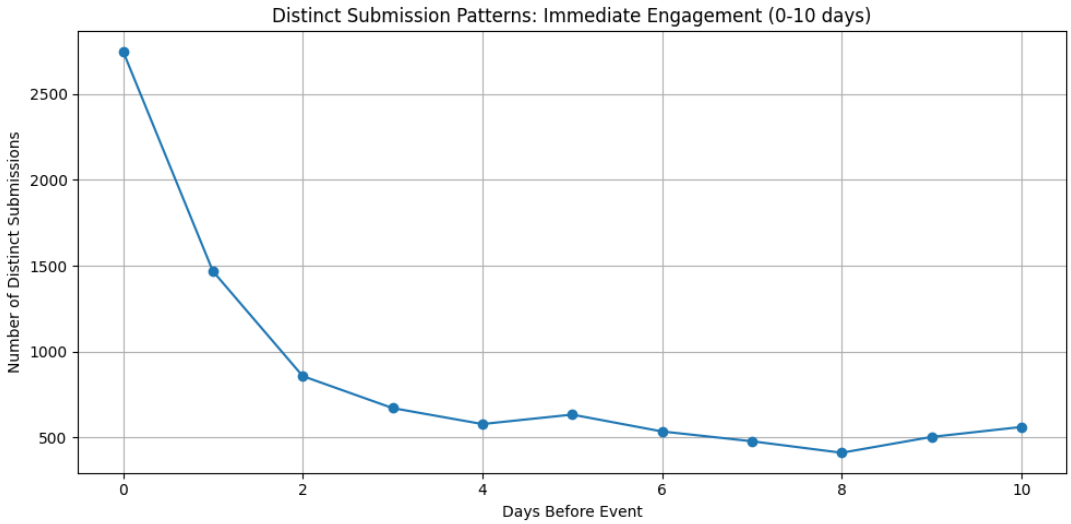

Figure 12: Total submissions by number of days before event (0-10 days)

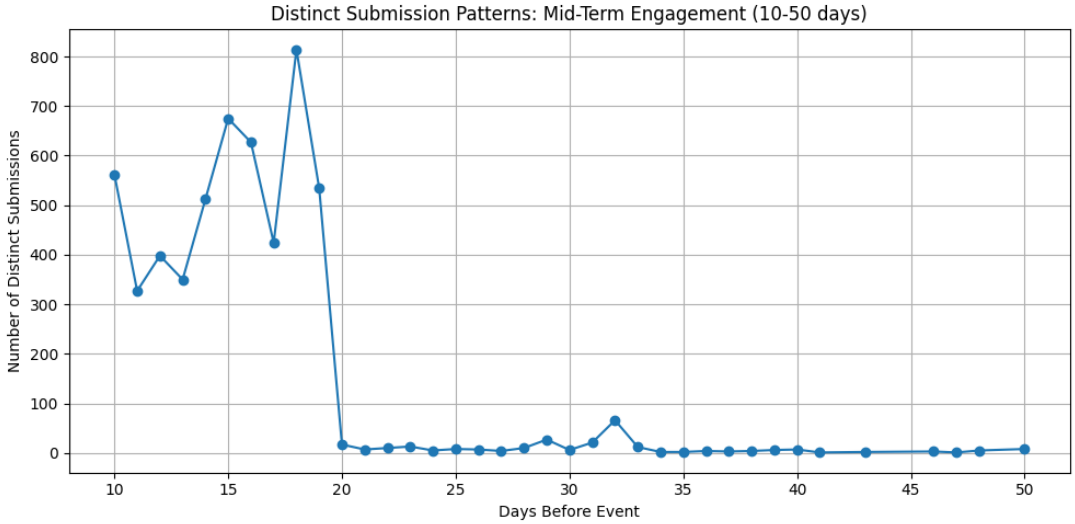

Figure 13: Total submissions by number of days before event (10-50 days)

Times of day of submissions

Insight: Overall, 1pm sees the highest number of submissions, with another smaller peak at 7pm, likely aligning with kick-off times. Submissions are highest between 9am and 9pm, with the hours outside of this seeing a sharp drop in submissions, as displayed in figure 14.

Suggestion: Marketing should be pushed mostly between the hours of 11 and 12am, with another push at 6pm to anticipate the 7pm uptick in submissions. This likely aligns both with kick-off times for matches, and times of day when people are the most available to make pledges. Thus, we

would anticipate that concentrating social media marketing in particular at these times would help increase engagement.

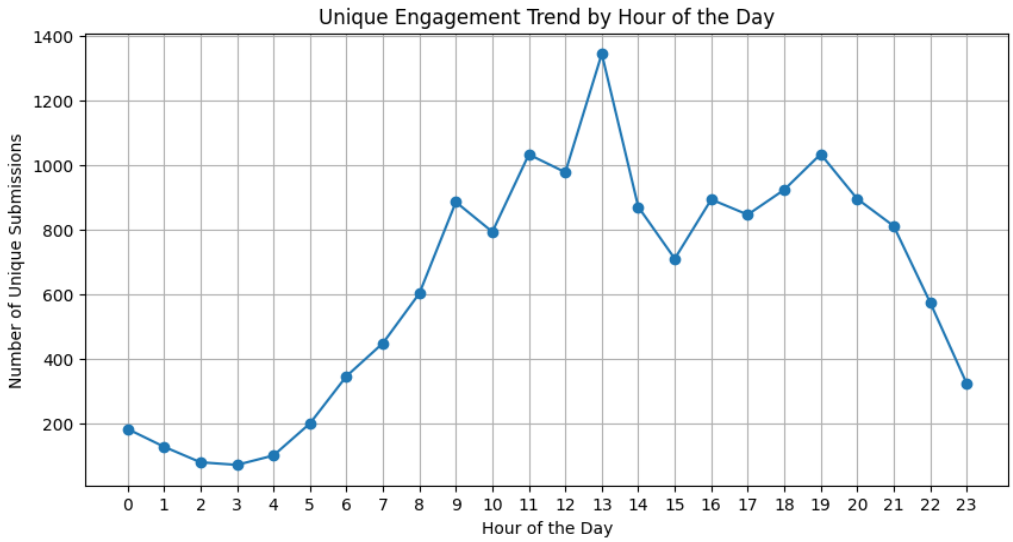

Figure 14: Total submission by hour of day of submission

Gender disparity

Insight: Supporters of women's teams engaged similarly to supporters of men's teams in terms of number of pledges per submission, but we found differences in the time-of-day submissions were made. Most submissions on behalf of women's teams were made at 6pm while for men's teams this was 1pm, as is displayed in figures 15 and 16.

Suggestion: Marketing should be conducted differently for men's and women's teams, with more emphasis on the 6pm push for women's teams and the 1pm push for men's teams. Whilst again this likely align with kick off times and times people are most available to engage with Pledgeball on social media, future consideration of time of day to release marketing/social media pushes should consider these different peak times for engagement from supporters of men's and women's teams.

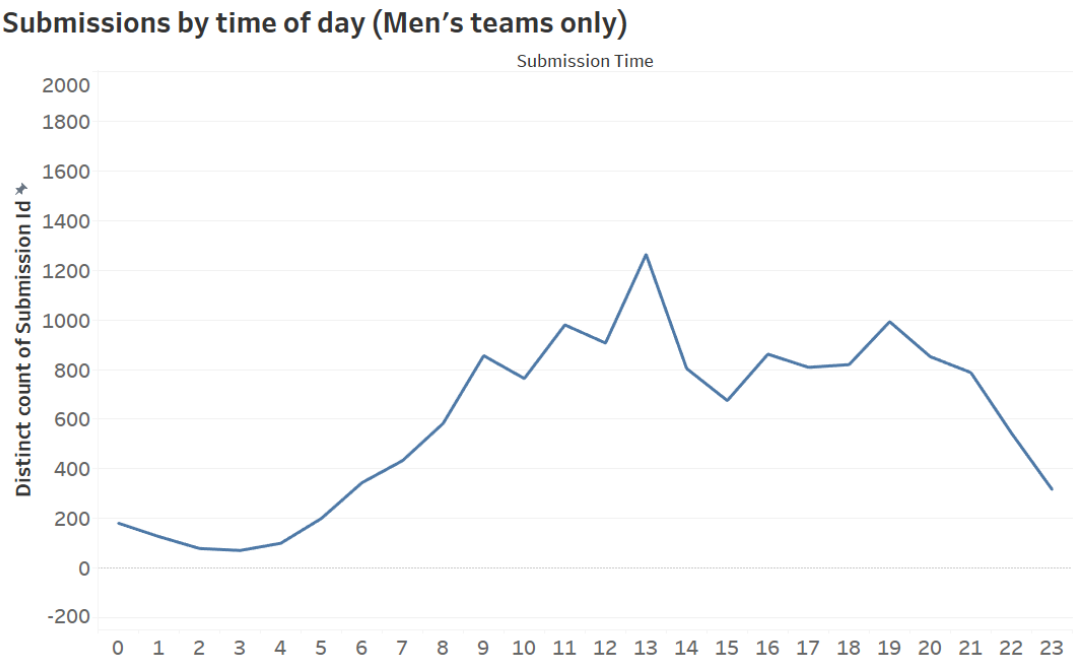

Figure 15: Submissions by time of day for men's teams

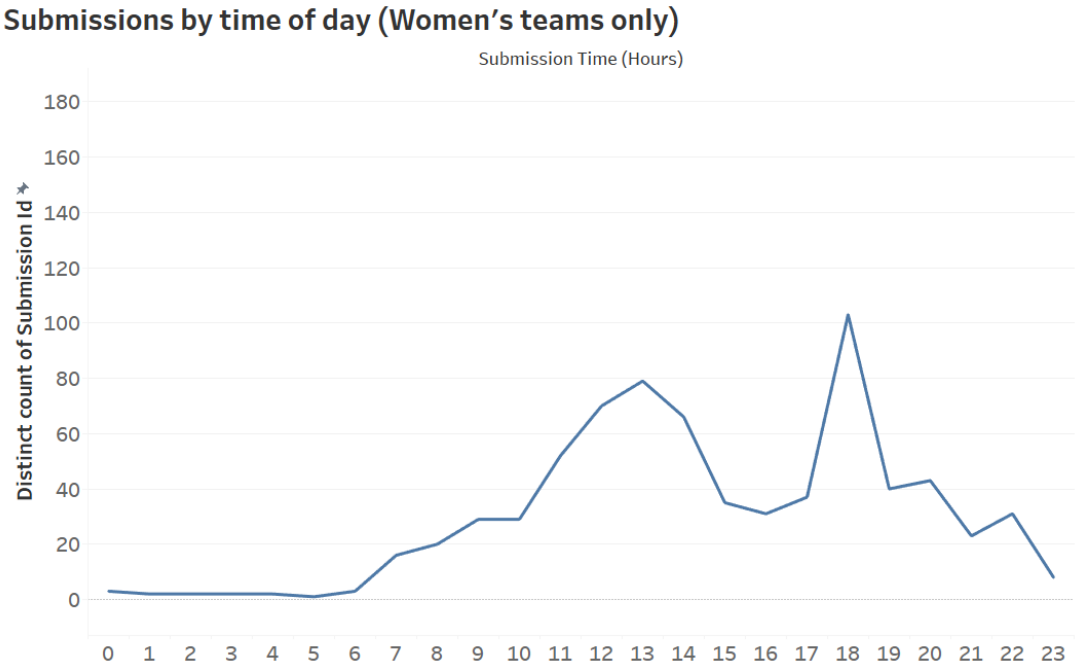

Figure 16: Submissions by time of day for women's teams

Successful partnerships

Insight: Incentives appear to be important to increasing engagement, including prizes such as tickets/ticket discounts, signed shirts, and ground tours, as well as a competitive element such as Derby Day challenges. Encouraging engagement throughout the club, men's and women's, also appears to increase engagement. Below we have noted some successful partnerships and incentives that Pledgeball has run to highlight this.

Suggestion: Continue to utilise incentives and aim to expand to other teams. Expand the competitive element of pledging to also be club wide, including women's teams, men's teams, and youth teams to further capitalise on the competitive nature of football fans.

Suggestion: Other ideas for cost-effective incentives include awarding tifos to the winning team that demonstrate their success in the Pledgeball League, or providing a certain number of fans who have made a pledge the opportunity to meet their team's football players

Champions League Final (Real Madrid vs Dortmund) – Wembley 2024

Description: Record-setting 6,975 fan submissions, largest Pledgeball event ever. Incentives & Techniques:

- Mastercard prize draw for Champions League Final tickets for every pledge.
- "Champions Innovate Pledge League" competition backed by UEFA & Mastercard.
- Celebrity endorsement: Gareth Bale promoting Pledgeball globally.
- Link/Source: (Pledgball, 2024) (Mastercard, 2024)

Northampton Town – 2023/24 Pledgeball League Winners

Description: Mobilized fans to save 1.95 million kg CO_2e, won Pledgeball Trophy. Incentives & Techniques:

- Integrated school programs, community litter picks, and matchday awareness events.
- Reusable cup scheme (deposit donation option).
- Half-price parking for carpooling.
- Community Trust led campaigns; fans recognized for contributions.
- Link/Source: (Pledgeball, 2024) (Northampton Chronicle and Echo, 2024)

Bristol City – Men's & Women's Teams "Double" Win

Description: Won both Men's & Women's Pledgeball League titles with over 1M kg CO_2e saved. Incentives & Techniques:

- Season-long weekly fixtures, fans asked to pledge per match.
- Prize draws: Signed shirts, hospitality packages, training ground tours.
- Sustainability competitions during season to maintain momentum.
- Link/Source: (Pledgeball, 2023) (Pledgeball, 2022)

Forest Green Rovers (FGR) – World's Greenest Club

Description: Globally recognized eco-club, ongoing partnership with Pledgeball. Incentives & Techniques:

- Embedded green ethos: Vegan food, green energy stadium.
- Partnership for fan pledge mobilization globally.
- Events with Pledgeball founder, fan eco challenges.
- Derby Day Pledge Challenges to boost competitive pledging.
- Link/Source: (Pledgeball, 2025) (Forest Green Rovers, 2024)

Dundee United – First Scottish Premiership Pledgeball Club

Description: First Scottish Premiership club to partner with Pledgeball. Incentives & Techniques:

- Prize draws for top pledgers: Meet players, signed shirts, free tickets.
- Dedicated Pledgeball matchday vs Arbroath.
- Tied into Green Football Cup for competitive element.
- Link/Source: (Dundee United Football Club, 2024)

Research recommendations

Note: This section contains other recommendations and notes on data analysis methods for the reference of future researchers engaging with Pledgeball submissions data.

Preparing for analysis

Insight: The first couple of weeks was spent purely on cleaning and preprocessing the data. This involves making the data as tidy as possible so that only the most relevant information is present and is presented in a clear and standardised way. We also added columns that were not initially in the data such as the ‘gender’ of the teams, whether they are from UK leagues or not, and which regions the UK teams were in.

Suggestion: We realise those that conduct and have conducted research for Pledgeball may have other methods of cleaning this data. We also recognise that it is valuable to spend time looking at

the raw data itself. However, we believe that it might be beneficial to provide this R code to those who conduct future data analysis research, so that they can quickly clean the data and spend more time analysing it.

Note: In the appendix, we have pasted the code that we used to clean the data, which is written in the programming language R. Applying it to future data would involve downloading R and R Studio onto one's computer. Within R Studio one can create a project '.Rproj' file and a script '.R'. file. If all these files are in the same folder alongside the latest 'PledgeDatafor180.csv' equivalent data, running the '.R' script should clean the data and export it as a .csv file ready for analysis.

Note: In the Appendix, we have also provided a table with our descriptions of most the columns in the raw data provided by Pledgeball for analysis. While Pledgeball might have a similar table already, this table might be a useful resource to provide to those who do research using this same data in future.

Statistical modelling

Insight: In addition to conducting exploratory data analysis, we made various attempts at using more advanced statistical modelling techniques to predict how certain trends in the submission data might extend into the future.

Insight: However, we found that these methods were not effective for Pledgeball's submissions data. This is partly because of the relatively small amount of data (only 15,080) distinct submissions, but also because the data is observational rather than experimental, which means it lacks controlled information about how it is influenced by other variables which might be used to make predictions. Here is more information on modelling methods we tried.

1. **Time series forecasting:** ARIMA modelling is done to predict the number of submissions in future, but faced challenges as the event type is different, some are opening matches some are finales, and we cannot distinguish between them.
2. **Linear Regression:** The model works on quantifiable data where the quantities have relations between them. As we have quantized distinct fields, there is no specific relationship between them.
3. **Other (XGBoost):** We also explored ensemble methods like XGBoost. However, the sparse nature of the data, combined with the fact that most clubs have relatively few submissions and few repeated patterns, made it difficult for tree-based models to learn any meaningful rules. Moreover, without engineered external features (e.g., match importance, media coverage, weather), even the most powerful models struggled to identify statistically robust patterns. No statistically notable patterns were not identified as per dataset.

Suggestions: We would suggest that future researchers into Pledgeball's submission data do not spend significant time on statistical modelling and instead focus on drawing insights through

visualisations and employing more traditional statistical methods which are more effective for modest amounts observational data. With observational data it is also important to note that any relationships found using statistical modelling should be interpreted cautiously, as associations rather than clear causal relationships.

Further research ideas

Submissions per event: For this short project, we did not have the time or scope to look further into how the submissions are distributed across events for any given demographic. For example, a brief examination of this revealed that, for Bristol City, the total submissions are more evenly spread across the total events. This contrasts with most other teams, for which the total submissions are mostly from a small number of events. We think that this would be a very interesting area to research further to uncover which teams show more consistent as opposed to sporadic engagement, and to analyse the short term versus long term efficacy of different partnerships that Pledgeball has made.

Using external data: Again, due to the limited scope of this project, we were unable to incorporate social media analytics into our research. We did briefly consider web scraping to trawl social media for information about football clubs and their social media profiles, although this was both beyond the scope of our project and a mammoth task. In retrospect, we recommend referring to team's social media channels and reports regarding their fanbases and relationship to the environment on a case-by-case basis for the handful of teams with the most submissions (see figure 6) and draw qualitative insights. We also believe it would be of interest for future researchers to have information from Pledgeball on all the partnerships they have made over the years as to investigate which of these might not been successful and why.

Note on data visualisation: In case this has not been mentioned elsewhere, we used Tableau Public to create the charts used in this report. This meant we could only share our interactive dashboard on Tableau Public. While the data is not sensitive and this was approved by the client, this means that the cleaned data used for analysis is currently available for anyone to access if they were to download the dashboard on Tableau Public. We would perhaps recommend future researchers to use Microsoft's data visualisation software PowerBI, which, while we do not have experience with, we believe would avoid this privacy issue.

Conclusion

Key takeaways from this report include temporal insights that could be used to effectively schedule marketing and social media campaigns, regarding time of year, week, and day as well as days before an event. Furthermore, this report demonstrates which leagues are the most engaged and confirms that the Championship with its smaller more localised fanbases is the most engaged

league, and therefore a league worth targeting more teams within to expand Pledgeball's reach. Within women's leagues however, it is worth focusing on the Barclay's WSL as the most engaged and biggest women's league – this also has the potential to inspire further engagement from men's Premier League teams as many clubs have sides in both leagues. This report has also revealed the power of incentives in increasing engagement and has made suggestions on how to expand the incentives Pledgeball offers.

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Appendix

R Code for Data Cleaning

Here is the R code which was used to clean the data provided by Pledgeball into a more manageable form.

```
# Install packages and data

install.packages("tidyverse")

library(tidyverse)

data <- read.csv("PledgeDatafor180.csv")


# Create a dataset with only the desired columns from the provided data
```

```
data = select(data, "SubmissionNumber", "Description", "KgCO2e", "Category", "Submission",
"EventID", "Title", "Location", "EventDate", "season", "Team")


# Rename all the columns of this data set

colnames(data) <- c("submission_id", "pledge_description", "co2e_of_pledge",
"pledge_category", "submission_date_and_time", "event_id", "league", "event_stadium",
"event_date", "season", "team")


# Standardise the ‘pledge_id’, 'submission_id' and 'event_id' columns

data$pledge_id <- 1:nrow(data)

data = data %>%

  group_by(submission_id) %>%

  mutate(submission_id = cur_group_id())

data = data %>%

  group_by(event_id) %>%

  mutate(event_id = cur_group_id())


# Fill in the missing values in the 'season' column

data$season[1:175] <- 2019

data$season[176:2457] <- 2020

data$season[2458:5467] <- 2021


# Reclassify temporal variables as date-time class

data$submission_date_and_time <- as.POSIXct(data$submission_date_and_time)

data$event_date <- as.POSIXct(data$event_date)


# Merge the similarly-named 'league' and ‘pledge_category’ entries together
```

```
data$league[data$league == "Premier League Cup"] <- "Premier League"

data$league[data$league == "Continental League Cup"] <- "FA Women's Cup"

data$pledge_category[data$pledge_category == 'Packaging and plastic'] <- 'Packaging'


# Merge the similarly-named 'pledge_description' entries together

data$pledge_description <- fct_collapse(data$pledge_description, "Calculate your carbon footprint and make the change that would reduce it the most" = c("Calculate your carbon footprint and make the change that reduces it most", "Calculate your carbon footprint and make the change that would reduce it the most"))

data$pledge_description <- fct_collapse(data$pledge_description, "Go vegan for two days a week" = c("Eat vegan 2 days per week", "Go vegan for two days a week"))

data$pledge_description <- fct_collapse(data$pledge_description, "Reduce your dairy consumption by 50%" = c("Reduce dairy consumption by 50%", "Reduce your dairy consumption by 50%"))

data$pledge_description <- fct_collapse(data$pledge_description, "Buy seasonal groceries only from in-country suppliers" = c("Buy only seasonal, locally-produced food", "Buy seasonal groceries from local suppliers", "Buy seasonal groceries only from in-country suppliers"))

data$pledge_description <- fct_collapse(data$pledge_description, "Cook your leftovers and minimise your food waste" = c("Cook leftovers to minimise food waste", "Cook your leftovers and minimise your food waste"))

data$pledge_description <- fct_collapse(data$pledge_description, "Hang your washing out instead of using the tumble dryer" = c("Hang your washing out instead of using a tumble dryer", "Hang your washing out instead of using the tumble dryer"))

data$pledge_description <- fct_collapse(data$pledge_description, "Set a 4-minute timer for your showers" = c("Set a 4-minute timer for your showers", "Set a 4-minute timer for showers"))

data$pledge_description <- fct_collapse(data$pledge_description, "Wash at 30 degrees" = c("Wash at 30 degrees", "Wash at 30Ã‹Å¡C"), "Keep chargers, TVs and computers off at the wall" = c("Turn electrical switches off at the wall", "Keep chargers, TVs and computers off at the wall"))

data$pledge_description <- fct_collapse(data$pledge_description, "Take bottles etc to shops for refills of dry goods, fruit, veg and home cleaning products" = c("Take bottles etc to shops for
```

```
refills of dry goods, fruit, veg and home cleaning products", "Take bottles, jars and tupperware to shops for refills"))

data$pledge_description <- fct_collapse(data$pledge_description, "Use an eco-cup for hot drinks on the go" = c("Use an eco-cup for hot drinks", "Use an eco-cup for hot drinks on the go"))

data$pledge_description <- fct_collapse(data$pledge_description, "If you think the council could offer more recycling services, write and tell them" = c("Write to your local government if you think they could offer better recycling services", "If you think the council could offer more recycling services, write and tell them"))

data$pledge_description <- fct_collapse(data$pledge_description, "Use solid hair-care products eg shampoo bar" = c("Use solid hair-care products (eg shampoo bar)", "Use solid hair-care products eg shampoo bar"))

data$pledge_description <- fct_collapse(data$pledge_description, "Gift green: buy only eco-friendly or second hand presents" = c("Buy gifts that are eco-friendly or second-hand", "Gift green: buy only eco-friendly or second hand presents"))

data$pledge_description <- fct_collapse(data$pledge_description, "Use public transport instead of driving" = c("Use public transport instead of driving", "Use public transport instead of driving alone"))

data$pledge_description <- fct_collapse(data$pledge_description, "Walk or cycle if the journey is under 2 miles" = c("Walk or cycle if the journey is under 2 miles", "Walk or cycle if a journey is under 2 miles/3,2km"))

data$pledge_description <- fct_collapse(data$pledge_description, "Go vegan" = c("Go vegan", "Eat only plant-based food"))

data$pledge_description <- fct_collapse(data$pledge_description, "Go vegetarian" = c("Go vegetarian ", "Go vegetarian"))

data$pledge_description <- fct_collapse(data$pledge_description, "Plant a tree and help restore the earth" = c("Plant some trees", 'Plant a tree and help restore the earthÃ¢â‚¬â„¢s forests\n<a style="text-decoration:underline; font-family: Poppins, sans-serif;font-size: 20px;font-weight: 700;" href="https://give.mastercard.com/p/ppc-dedication" title="Mastercard">with Mastercard</a>'))

data$pledge_description <- fct_collapse(data$pledge_description, "Other pledge" = c("Other Pledge", "Commit to organic farming instead of using pesticides to grow crops", "Encourage friends, family and co-workers to reduce their carbon footprint", "Recycle as much as possible"))
```

```
# Label pledge categories no longer on the website as obsolete

data$pledge_description[data$pledge_description == 'Plant a tree and help restore the earth (obsolete)'] <- 'Plant a tree and help restore the earth'

data$pledge_description[data$pledge_description == 'Eat my first veggie meal on Green Football Weekend (obsolete)'] <- 'Eat my first veggie meal on Green Football Weekend'

data$pledge_description[data$pledge_description == 'Eat only veggie meals twice a week (obsolete)'] <- 'Eat only veggie meals twice a week '

data$pledge_description[data$pledge_description == 'Eat a veggie meal once a day  (obsolete)'] <- 'Eat a veggie meal once a day '


# Create column which categorises whether each league is solely based in the UK or not

data$league_region = ifelse(grepl("World", data$league), "Non-UK", ifelse(grepl("UEFA", data$league), "Non-UK",  ifelse(grepl("Tokyo", data$league), "Non-UK", ifelse(grepl("Continental", data$league), "Non-UK", ifelse(grepl("Arnold", data$league), "Non-UK", "UK")))))


# Create column which categorises whether each football team is men's or women's

data$team_gender = ifelse(grepl(" W", data$team), "Women's", "Men's")


# Classify categorical variables as factors class

data[c("league", "league_region", "team", "team_gender", "event_stadium", "season", "pledge_description", "pledge_category")] <- lapply(data[c("league", "league_region", "team", "team_gender", "event_stadium", "season", "pledge_description", "pledge_category")], as.factor)


# Reorder the columns into a more intuitive order

data = data[, c("pledge_id", "submission_id", "event_id", "submission_date_and_time", "event_date", "league", "league_region", "team", "team_gender", "event_stadium", "season", "pledge_description", "co2e_of_pledge", "pledge_category")]


# Export the dataset as a csv file
```

```
write.csv(data, " CleanedPledgeDatafor180.csv", row.names = FALSE)
```

Description of Columns in Raw Data

Here is a table with our descriptions of most the columns in the raw data provided by Pledgeball for analysis.

A	1	ID	219025 distinct integer values from 1063 to 311362, without repeats
B	2	SubmissionNumber	15080 distinct integer values from 198 to 22029, with repeats for multiple pledges submitted at the same time by the same person
C	3	PledgeNumber	101 distinct values from 1 to 113 which represent the type of pledge
D	4	Other	N/A
E	5	Number	Duplicate of PledgeNumber
F	6	Description	91 distinct string descriptions of pledges, linked to PledgeNumbers
G	7	KgCO2e	51 distinct float values from -1 to 2417.7, estimates of carbon dioxide equivialent reduced by pledge, with -1s where value is uncertain
H	8	Category	17 distinct string descriptions categorising pledges
U	9	eventgroup	Almost all 0, but 90 2s
I	10	Countrycode	N/A
J	11	Countrycode2	N/A
K	12	Eventnumber	N/A
L	13	Teamgroupnumber	N/A
M	14	Priority	Values either 1, 2 or NULL, with frequency 18072, 200864 and 90 respectively, linked to conflicting pledges
N	15	Exclude	Mostly empty with 4000 ’14,15’, 9000 ‘15’, 4000 ‘57’, 2500 ’60’ and 1291 ‘9,10,12,13,14’ entries, linked to conflicting pledges
O	16	ID.1	Duplicate of SubmissionNumber
P	17	Firstname	Encrypted names and emails corresponding to each SumbissionNumber/ ID.1, encryption removes duplicates
Q	18	Lastname	See above
R	19	Email	See above
S	20	Submission	Date and time of submission from 2020-07-06 12:11:44 to 2025-01-07 07:51:05, YMD date format
U	21	GetPledgeBallNews	0 or 1, with ratio 0:1 around 3:2, indicates subscription to newsletter
V	22	EventID	953 distinct integer values from 76 to 49132 corresponding to events somehow

W	23	TeamName	N/A
X	24	Side	A or B, roughly 1:1 ratio
Y	25	Tobeprocessed	Either 0 or NULL, 0:NULL 20:1, not sure what this means
Z	26	Emailmessage	1204 distinct email messages written in some kind of HTML-esque formatting
AA	27	TemplateRedNo	76,413 NULL entries, then either 1, 11, 13 or 18
AB	28	TemplateLanguageCode	76,413 NULL entries, two letters referring to language of donor de, en, es, fr
AE	29	TotalCO2	76,413 0 entries, then 7836 distinct float values from 2 to 758.78
AG	30	Metadata	Around half NULL, but otherwise a handful of bracketed strings like this {"type":"ballcomp","ballcomp":null,"country":"uk"},
AH	31	ID.2	Duplicate of EventID
AI	32	Firstname.1	NULL
AJ	33	Lastname.1	NULL
AK	34	Email.1	NULL
AL	35	Phone	NULL
AM	36	Title	54 distinct league names across the world
AN	37	Location	295 distinct locations for football games
AO	38	EventDate	369 distinct dates from 2020-07-05 to 2025-01-14, YMD format
AP	39	EventType	Almost all football, 248 not labelled
AQ	40	OtherType	N/A
AT	41	MaximumParticipants	N/A
AU	42	Description1	N/A
AV	43	Status	Practically all 2, but 15 1s and 16 3s,
AW	44	DateCreated	N/A
AX	45	EndDate	369 distinct dates like EventDate, all events probably one day
AY	46	Category.1	N/A
AZ	47	SideA	308 distinct strings of football team names
BA	48	SideB	314 distinct strings of football team names
BB	49	TotatlCO2.1	13 0 entries, then 313 distinct float values from 2 to 20,708,200, much larger maximum than TotatlCO2, not sure what this means
BC	50	NumberSubmissions	77 distinct integers from 1 to 7741, seems to allign with events

BD	51	NumberUnquantified	Empty
BE	52	FixtureSource	Mostly RAPIDAPIFOOTBALL
BF	53	FixtureSourceID	ID numbers for FixtureSource
BG	54	TotalCO2SideA	Total club pledges, but no SideB data
BH	55	NumberUnquantifiedSideA	No SideB data
BI	56	NumberSubmissionsSideA	Total club submissions, no SideB data
BJ	57	LogoType	Not useful
BK	58	Logo	Not useful
BL	59	Eventgroup1	All 0s
BM	60	Countrycode.1	All 0s
BN	61	Countrycode2.1	All 0s
BO	62	Latitude	All 0s
BP	63	Longitude	All 0s
BQ	64	Season	Season of corresponding event
BR	65	Mode	Even spit of 0 and NULL
BS	66	Team	Team the pledger supports

Regions of UK Teams

Here is the list we created of the UK teams in the Pledgeball submissions dataset as of January 2025 alongside the region of the UK that team is in. We used this list to make the regions chart..

The text could be saved as a csv file and integrated into the dataset with the following R code if future researchers ever wish to look further into the team regions and their submissions.

```
# Create a columns with the regions of the UK teams from a csv of their names and regions

team_regions <- read.csv("UniqueTeamRegions.csv")

colnames(team_regions) <- c("team", "region")

core = core %>%

  mutate(team_region = ifelse(team[n()] %in% regions$team,
team_regions$region[which(team_regions$team == team[n()])], "Not-UK"))
```

Team,Region
Aberdeen,Scotland
Accrington Stanley,North West
AFC Bournemouth U21,South West
AFC Fylde,North West
AFC Wimbledon,London
Alvechurch,West Midlands
Arsenal,London
Arsenal W,London
Aston Villa,West Midlands
Aston Villa W,West Midlands
Barnet,London
Barnsley,Yorkshire and the Humber
Barrow,North West
Basingstoke Town,South East
Bath City,South West
Berwick Rangers,Scotland
Birmingham City,West Midlands
Birmingham City U21,West Midlands
Birmingham City W,West Midlands
Bishop's Cleeve,South West
Bishop's Stortford,East of England
Blackburn Rovers,North West
Blackpool,North West
Blyth Spartans,North East
Bolton Wanderers,North West
Boreham Wood,East of England
Bournemouth,South West
Bradford,Yorkshire and the Humber
Bradford City,Yorkshire and the Humber
Brentford,London
Brighton & Hove Albion,South East
Brighton W,South East
Bristol City,South West
Bristol City W,South West
Bristol Rovers,South West
Bromley,London
Burnley,North West
Burnley FC Women,North West
Burnley U21,North West
Burnley W,North West
Burnley Women,North West
Burton Albion,West Midlands

Cambridge United,East of England
Cardiff City,Wales
Cardiff City U21,Wales
Cardiff City Women,Wales
Carlisle,North West
Carshalton Athletic,London
Celtic,Scotland
Charlton,London
Charlton Athletic U21,London
Chelmsford City,East of England
Chelsea,London
Chelsea U18,London
Chelsea W,London
Cheltenham Town,South West
Chesham United,South East
Chesterfield,East Midlands
Chippenham Town,South West
Chipstead,South East
Clevedon Town,South West
Colchester United,East of England
Colchester United U21,East of England
Coventry City,West Midlands
Coventry City U21,West Midlands
Coventry United W,West Midlands
Crawley Town,South East
Cray Valley PM,London
Crewe,North West
Crystal Palace,London
Dagenham & Redbridge,London
Derby County,East Midlands
Derby County U18,East Midlands
Doncaster Rovers,Yorkshire and the Humber
Dulwich Hamlet,London
Dulwich Hamlet,London
Dundee,Scotland
Dundee Utd,Scotland
Dunfermline,Scotland
Eastbourne Borough,South East
Eastleigh,South East
Eastleigh FC,South East
Edinburgh City,Scotland
Everton,North West
Everton U21,North West
Everton W,North West
Exeter City,South West

Exmouth,South West
Falkirk,Scotland
FC United,North West
Fleetwood Town,North West
Fleetwood Town U21,North West
Forest Green,South West
Fulham,London
Gainsborough Trinity,East Midlands
Gillingham,South East
Gloucester City,South West
Gosport Borough,South East
Grimsby Town,Yorkshire and the Humber
Hampton & Richmond,South East
Hanwell Town,London
Harrogate Town,Yorkshire and the Humber
Hartlepool,North East
Heart OF Midlothian,Scotland
Hendon,London
Hereford,West Midlands
Hibernian,Scotland
Hitchin Town,East of England
Huddersfield Town,Yorkshire and the Humber
Hull City,Yorkshire and the Humber
Ilkeston Town,East Midlands
Inverness CT,Scotland
Ipswich Town,East of England
Ipswich Town U21,East of England
Kettering Town,East Midlands
King's Lynn Town,East of England
Leeds United,Yorkshire and the Humber
Leeds United U18,Yorkshire and the Humber
Leeds United U21,Yorkshire and the Humber
Leicester City,East Midlands
Leicester City U18,East Midlands
Leicester City U21,East Midlands
Leicester City WFC,East Midlands
Lewes FC W,South East
Lewes W,South East
Leyton Orient,London
Lincoln City,East Midlands
Littlehampton Town,South East
Liverpool,North West
Liverpool U18,North West
Liverpool U21,North West
Liverpool W,North West

Livingston,Scotland
Lowestoft Town,East of England
Luton Town,East of England
Macclesfield,North West
Maidenhead,South East
Manchester City,North West
Manchester City U18,North West
Manchester City W,North West
Manchester United,North West
Manchester United U18,North West
Manchester United U21,North West
Manchester United W,North West
Mansfield Town,East Midlands
Middlesbrough,North East
Middlesbrough U18,North East
Middlesbrough U21,North East
Millwall,London
Milton Keynes Dons,South East
Morecambe,North West
Newcastle,North East
Newcastle Town,North East
Newcastle United,North East
Newcastle United,North East
Newcastle United U21,North East
Newport County,Wales
Northampton Town,East Midlands
Norwich City,East of England
Norwich City U18,East of England
Norwich City U21,East of England
Norwich City W,East of England
Nottingham Forest,East Midlands
Nottingham Forest U21,East Midlands
Notts County,East Midlands
Oldham,North West
Oxford United,South East
Oxford United Women,South East
Peckham Town FC,London
Peterborough,East of Midlands
Plymouth Argyle,South West
Plymouth Parkway,South West
Port Vale,West Midlands
Portsmouth,South East
Portsmouth Women,South East
Preston North End,North West
QPR,London

Queens Park Rangers U21,London
Rainbow Rovers,South East
Raith Rovers,Scotland
Rangers,Scotland
Rangers U21,Scotland
Reading,South East
Reading W,South East
Rotherham United,Yorkshire and the Humber
Salford City,North West
Salisbury,South West
Scunthorpe,Yorkshire and the Humber
Sheffield United W,Yorkshire and the Humber
Sheffield Utd,Yorkshire and the Humber
Sheffield Wednesday,Yorkshire and the Humber
Sheffield Wednesday U21,Yorkshire and the Humber
Shoreham FC,South East
Shrewsbury Town,West Midlands
Solihull Moors,West Midlands
South Shields,North East
Southampton,South West
Southampton U21,South West
Southampton W,South West
Southend,East of England
Southport,North West
ST Johnstone,Scotland
Stevenage,South West
Stockport County,North West
Stoke City,West Midlands
Stoke City U18,West Midlands
Stoke City U21,West Midlands
Stourbridge,West Midlands
Sunderland,North East
Sunderland W,North East
Sutton United,London
Swansea City,Wales
Swindon Town,South West
Torquay,South West
Torquay,South West
Tottenham Hotspur,London
Tottenham Hotspur U18,London
Tottenham Hotspur U21,London
Tottenham Hotspur W,London
Tranmere Rovers,North West
Walsall,West Midlands
Watford,East of England

Watford U21,East of England
Watford W,East of England
West Bromwich Albion,West Midlands
West Bromwich Albion U18,West Midlands
West Bromwich Albion U21,West Midlands
West Bromwich Albion Women,West Midlands
West Ham United,London
West Ham W,London
Weston-super-Mere,South West
Weymouth,South West
Whitehawk,South East
Whitehawk,South East
Whitehawk FC,South East
Wigan Athletic,North West
Woking,South East
Wolverhampton Wanderers,West Midlands
Wrexham,Wales
Wycombe Wanderers,South East
Yeovil Town,South West
York,Yorkshire and the Humber